

I claim:

1      2      1. A method of prefetching one or more Internet resources referenced in one or  
more Web pages, said method comprising the steps of:

3      obtaining an estimated round trip time for said Internet resources; and

4      prefetching said Internet resources based on said estimated round trip time.

1      2      2. The method according to claim 1, wherein two or more of said Internet  
resources are prefetched substantially in parallel.

1      2      3. The method according to claim 1, wherein said step of prefetching said  
Internet resources based on said estimated round trip time is performed only for Internet  
resources associated with origin servers that have been previously accessed and said method  
further comprising the step of prefetching all Internet resources associated with servers that have  
not been previously accessed.

1      2      4. The method according to claim 1, wherein said estimated round trip time for  
each Internet resource is based on average access time statistics for the corresponding origin  
server and the actual size of said Internet resource when said actual size is available.

1      2      5. The method according to claim 4, wherein said estimated round trip time for  
each Internet resource is based on average access time statistics for the corresponding origin  
server and the average size of Internet resources provided by said origin server if said origin  
server does not indicate said actual size.

1      2      6. The method according to claim 4, wherein said estimated round trip time for  
each Internet resource is based on average access time statistics for the corresponding origin  
server and the average size of Internet resources provided by said origin server if the setup and

4 wait time for accessing said origin server is not significantly less than the average round trip time  
5 for Internet resources obtained from said origin server.

1                   7. The method according to claim 1, wherein said estimated round trip time is  
2 based on at least one actual prior round trip time for said Internet resource.

1                   8. The method according to claim 1, wherein said step of prefetching said  
2 Internet resources does not begin until said one or more Web pages have been fetched.

1                   9. The method according to claim 1, wherein said step of prefetching said  
2 Internet resources continues until said Internet resources have been prefetched or until a user  
3 selects a new Web page.

1                   10. The method according to claim 1, further comprising the steps of storing said  
2 Internet resources in a cache and determining if any of said Internet resources are already stored  
3 in said cache before prefetching begins.

1                   11. The method according to claim 1, further comprising the step of applying a  
2 filter to said Internet resources to reduce the overhead on network, server or local resources due  
3 to prefetching.

1                   12. The method according to claim 11, wherein said filter discards all Internet  
2 resources that do not use the HTTP protocol for transmission.

1                   13. The method according to claim 11, wherein said filter discards all Internet  
2 resources that correspond to dynamically generated Web resources.

1                   14. The method according to claim 11, wherein said filter discards all Internet  
2 resources that correspond to resources whose size is more than a certain maximum size threshold.

1           15. The method according to claim 11, wherein said filter discards all Internet  
2 resources that correspond to resources whose estimated round trip time is longer than a certain  
3 maximum time.

1           16. The method according to claim 11, wherein said filter discards all Internet  
2 resources that correspond to resources whose estimated round trip time is shorter than a certain  
3 minimum time threshold.

1           17. A method of prefetching one or more Internet resources referenced in one or  
2 more Web pages, said method comprising the steps of:

3           determining an estimated round trip time for said Internet resources;  
4           sorting a list of said Internet resources based on said estimated round trip time;  
5           prefetching said sorted list of Internet resources until one or more predefined  
6 threshold conditions are met.

1           18. The method according to claim 17, wherein two or more of said Internet  
2 resources are prefetched substantially in parallel.

1           19. The method according to claim 17, wherein said step of prefetching said  
2 Internet resources based on said estimated round trip time is performed only for resources  
3 associated with origin servers that have been previously accessed and said method further  
4 comprising the step of prefetching all resources associated with servers that have not been  
5 previously accessed.

1           20. The method according to claim 17, wherein said estimated round trip time for  
2 each Internet resource is based on average access time statistics for the corresponding origin  
3 server and the actual size of said Internet resource when said actual size is available.

1           21. The method according to claim 20, wherein said estimated round trip time for  
2 each Internet resource is based on average access time statistics for the corresponding origin  
3 server and the average size of Internet resources provided by said origin server if said origin  
4 server does not indicate said actual size.

1           22. The method according to claim 20, wherein said estimated round trip time for  
2 each Internet resource is based on average access time statistics for the corresponding origin  
3 server and the average size of Internet resources provided by said origin server if the setup and  
4 wait time for accessing said origin server is not significantly less than the average round trip time  
5 for Internet resources obtained from said origin server.

1           23. The method according to claim 20, further comprising the step of applying a  
2 filter to said Internet resources to reduce the overhead on network, server or local resources due  
3 to prefetching.

1           24. The method according to claim 23, wherein said filter discards all Internet  
2 resources selected from the set comprised substantially of those Internet resources that (i) do not  
3 use the HTTP protocol for transmission; (ii) correspond to dynamically generated Web  
4 resources; (iii) correspond to resources whose size is more than a certain maximum size  
5 threshold, (iv) correspond to resources whose estimated round trip time is longer than a certain  
6 maximum time, or (v) correspond to resources whose estimated round trip time is shorter than a  
7 certain minimum time threshold.

1           25. A system for prefetching one or more Internet resources referenced in one or  
2 more Web pages, each of said Internet resources having an associated origin server, said tool  
3 comprising:

4           a memory for storing a server statistics database that records access time statistics  
5 for each origin server that has been previously accessed;  
6           a processor operatively coupled to said memory, said processor configured to:

7                    obtain an estimated round trip time for said Internet resources; and  
8                    prefetch said Internet resources based on said estimated round trip time.

1                    26. The system according to claim 25, wherein said server statistics database  
2                    records the average setup, wait and byte transmission times and average resource size for said  
3                    Internet resources obtained from said corresponding origin server.

1                    27. A method of prefetching one or more Internet resources referenced in one or  
2                    more Web pages, said method comprising the steps of:

3                    determining if one or more of said Internet resources are candidates for  
4                    prefetching based on an estimated round trip time; and

5                    prefetching said Internet resources that are determined to be candidates for  
6                    prefetching.

1                    28. An article of manufacture for prefetching one or more Internet resources  
2                    referenced in one or more Web pages, said article of manufacture comprising:

3                    a computer readable medium having computer readable program code means  
4                    embodied thereon, said computer readable program code means comprising program code means  
5                    for causing a computer to:

6                    obtain an estimated round trip time for said Internet resources; and  
7                    prefetch said Internet resources based on said estimated round trip time.

1                    29. A method of prefetching one or more Internet resources referenced in one or  
2                    more Web pages, said method comprising the steps of:

3                    obtaining an estimated round trip time for said Internet resources  
4                    identifying a subset of said Internet resources that are candidates for prefetching  
5                    based on said estimated round trip time; and

6           determining whether to prefetch one or more of said Internet resources in said  
7   subset of Internet resources based on predefined conditions, at least one of said predefined  
8   conditions being based on said estimated round trip time.

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